

We claim:

1. An electrical component assembly, comprising:
a substrate having a plurality of pads on a first surface thereof;
an integrated circuit chip having a film laminated on an active surface thereof, the
5 film having a plurality of holes therethrough filled with an electrically conductive material
that extends from contacts on the active surface aligned with the holes through the film
to the plurality of pads on the substrate.
2. The electrical component assembly of Claim 1 wherein the electrically conductive
material in the plurality of holes are discrete solder bumps pre-assembled on the
10 integrated circuit chip.
3. The electrical component assembly of Claim 1 further comprising a layer of flux
adhesive between a subassembly comprising the film and the electrically conductive
material and the substrate.
4. An electrical component assembly, comprising:
15 an integrated circuit chip having a plurality of pads on an active surface thereof;
a substrate having a film laminated on a first surface thereof, the film having a
plurality of holes therethrough filled with an electrically conductive material that extends
from contacts on the first surface aligned with the holes through the film to the plurality
of pads on the integrated circuit chip.
- 20 5. The electrical component assembly of Claim 4 wherein the electrically conductive
material in the plurality of holes are discrete solder bumps pre-assembled on the
substrate.

6. The electrical component assembly of Claim 4 further comprising a layer of flux adhesive between a subassembly comprising the film and the electrically conductive material and the integrated circuit chip.
7. A method for making an electrical component assembly, comprising the steps of:
- 5 laminating a film on an active surface of an integrated circuit;
- producing holes in the film to expose contact pads on the active surface of the integrated circuit chip;
- filling the holes with an electrically conductive material;
- placing the integrated circuit chip on a substrate with the film located between
- 10 the integrated circuit chip and the substrate; and
- reflowing the electrically conductive material in order to attach the integrated circuit chip to the substrate.
8. The method of Claim 7 further comprising the step of:
- coating a surface of the film which faces the substrate with a flux adhesive.
- 15 9. The method of Claim 7 wherein the filling step comprises filling the holes with molten solder.
10. The method of Claim 7 wherein the filling step comprises filling the holes with solder paste.
11. The method of Claim 7 wherein the holes in the encapsulant are produced by
- 20 laser drilling.
12. The method of Claim 7 wherein the holes in the encapsulant are produced by plasma etching.

13. The method of Claim 7 wherein the holes in the encapsulant are produced by chemical etching.
14. The method of Claim 7 wherein the holes in the encapsulant are produced by photoimaging.
- 5 15. A method for making an electrical component assembly, comprising the steps of:
laminating a film on a substrate;
producing holes in the film to expose contact pads on the substrate;
filling the holes with an electrically conductive material;
placing an integrated circuit chip on a substrate with the film located between the
10 integrated circuit chip and the substrate; and
reflowing the electrically conductive material in order to attach the integrated
circuit chip to the substrate.
16. The method of Claim 15 further comprising the step of:
coating a surface of the film which faces the integrated circuit chip with a flux
15 adhesive.
17. The method of Claim 15 wherein the filling step comprises filling the holes with molten solder.
18. The method of Claim 15 wherein the filling step comprises filling the holes with solder paste.
- 20 19. A method for making an electrical component assembly, comprising the steps of:
laminating a film on a substrate having discrete solder bumps thereon;

placing an integrated circuit chip on a substrate with the film located between the integrated circuit chip and the substrate; and

reflowing the solder bumps in order to attach the integrated circuit chip to the substrate.

5 20. The method of Claim 18 further comprising the step of:

coating a surface of the film which faces the integrated circuit chip with a flux adhesive.

21. A method for making an electrical component assembly, comprising the steps of:
laminating a film on an active surface of an integrated circuit chip having discrete
10 solder bumps thereon;

coating a substrate with a portion of an encapsulant;

placing the integrated circuit chip on the substrate with the film and encapsulant
portion located between the integrated circuit chip and the substrate;

curing the encapsulant portion; and

15 reflowing the solder bumps in order to attach the integrated circuit chip to the
substrate.

22. A method for making an electrical component assembly, comprising the steps of:
laminating a film on an active surface of an integrated circuit chip having discrete
solder bumps thereon;

20 coating the film with a portion of an encapsulant;

placing the integrated circuit chip on the substrate with the film and encapsulant
portion located between the integrated circuit chip and the substrate;

curing the encapsulant portion; and

25 reflowing the solder bumps in order to attach the integrated circuit chip to the
substrate.